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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/523,796	02/08/2005	Kun Li	46843.212557	6163

26694 7590 03/18/2008

VENABLE LLP
P.O. BOX 34385
WASHINGTON, DC 20043-9998

EXAMINER	
BUI, BRYAN P	

ART UNIT	PAPER NUMBER
2153	

MAIL DATE	DELIVERY MODE
03/18/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/523,796	LI ET AL.	
	Examiner	Art Unit	
	BRYAN P. BUI	2153	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 December 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *8,9 and 11-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *8,9 and 11-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 December 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *05/06/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This is responsive to Amendment filed on 12/18/2007 to the original application No. 10/523,796 filed on 02/08/2005.

2. Claims 8, 9 and 11-29 are pending of which claims 8, 9 and 13-16 have been amended.

Claims 1-7 and 10 are cancelled by applicant, therefore are not considered in this action. Claims 8, 17 and 25 are independent claims.

Information Disclosure Statement

3. Applicant's arguments on page 11, second paragraph with respect to IDS have been fully considered and are persuasive. Accordingly, the information disclosure statements (IDS) filed on 05/06/2005 is being considered by the examiner and placed into the record.

Response to Amendment

4. Applicant's amendments to the specification appropriately address the objection raised in the previous office action due to the title of the invention. Accordingly, this objection is withdrawn in view of Applicant's amendments.

5. The Replacement Sheets of the drawings have been received and entered into the record. Accordingly, the objection to the drawings is withdrawn in view of applicant's submission.

6. Applicant's amendments to the claims appropriately address the rejections to the claims 13-16 under 35 U.S.C. 112, second paragraph raised in the previous office action. Accordingly, these rejections are withdrawn in view of Applicant's amendments.

Response to Arguments

7. Applicant's arguments with respect to claims 8-29 have been considered but are moot in view of the new ground(s) of rejection. It is noted that applicant's amendment of claims have changed the scope of the claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 8, 9, 12, 17-19 and 22-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over European Patent Application No. EP 1006751 A2 issued to Ramsden et al. in view of Ramakrishnan (US Pat No. 6,167,029).

As to claim 8, Ramsden discloses: A flow-control method for data traffic transmitted through a synchronous digital hierarchy (SDH) network (see Ramsden, the Abstract: **"A method for operating the apparatus comprises**

means for controlling flow of frame based data transmitted from a local frame based data channel interface over a synchronous digital network") comprising:

A) creating and encapsulating, during data transmission through said SDH network, one or more line flow-control protocol (LFP) frames, according to a data volume of a frame cache of a first Ethernet over SDH/SONET (EoS) device coupled to said SDH network, wherein each LFP frame is mapped to an SDH payload as a common data frame (see Ramsden, Figure 1 and paragraph [0024]: **[Multiplexers 100, 101 may each be considered to comprise a payload mapping function configured to map Ethernet frame based data into one or more concatenated SDH virtual containers(VC's) and a rate modification function for effecting flow control of frame based data, transmitted from an Ethernet switch 103, 104 over synchronous digital network 102]** (lines 45-51)); and

B) transferring said one or more LFP frames to a second EoS device coupled to said SDH network (see Ramsden, also Figure 1 and paragraph [0024]); and

C) demapping the SDH payload at said second EoS device(see Ramsden, Figure 4, element 413: Frame De-stuffer(HDLC de-stuffer); and

D) identifying said one or more LFP frames at said second EoS device **[Ethernet data frames received so that start and end frame boundaries may**

be identified and also so that any data values having the value of a start and end of frame value are labeled to enable a receiving entity to decipher start/end information from actual data](see Ramsden, column 13, lines 7-12); and

E) interpreting and executing flow-control information contained in said one or more LFP frames at said second EoS device **[Following step 804 control is passed to step 805 wherein the frame received at step 801 is executed. In other words, at step 805 the pause frame is executed so that the specified transmission inhibition time interval (specified by the received pause frame) is invoked upon Ethernet switch 103]** (see Ramsden, column 18, lines 11-17).

However, Ramsden does not expressly discloses the newly added feature of "*wherein if the data volume exceeds an upper threshold of the frame cache, the created LFP frames contain a control field which controls to stop sending data, and if the data volume is lower than a lower threshold of the frame cache, the created LFP frames contain a control field which controls to start sending data*".

Ramakrishnan, from the same or similar field of endeavors, discloses a method for requesting a pause in transmission of data from a source station to a destination, where the source station and destination station are coupled in a full duplex manner (see Ramakrishnan, column 4, lines 15-18), wherein a pause frame is used to facilitate flow control with full-duplex communications (col. 6, lines 39-40). Ramakrishnan further teaches "Once a frame has been received,

the frame is stored 704 in a receive buffer for processing. Additionally, a decision block 706 determines whether the buffer level is greater than an upper threshold. When the buffer level is determined to be greater than the upper threshold, then the reception side pause control processing 700 understands that a pause frame will need to be generated and transmitted. On the other hand, when the decision block 706 determines that the buffer level does not exceed the upper threshold, then a decision block 708 determines whether the buffer level is then below a lower threshold. When the buffer level is determined to not be less than the lower threshold, then the current buffer level conditions are such that a pause frame does not need to be generated and transmitted, and as such the reception side pause control processing 700 returns to the decision block 702 to process the reception of a next frame. On the other hand, when the decision block 708 determines that the buffer level is less than the lower threshold, then the reception side pause control processing 700 determines that a pause frame needs to be generated and transmitted to perform flow control. In one embodiment, the lower threshold can correspond to the AE level 610 and the upper threshold can correspond to the AF level 608 for a receive buffer as described above with reference to FIG. 6" (see col. 8, line 60 – col.9 ,line 16). Ramakrishnan also discloses "When the amount of data stored in the receiving buffer 606 reaches the AF level 608 (*upper threshold*), then the MAC control 602 produces and issues a pause frame to a sending station to inform to the sending station that data transmission (to the receiving buffer 606) should temporarily be stopped. The production and issuance of the pause frame are automatically

performed by the MAC control 602. Accordingly, the pause frame is generated internally so that it is able to be sent with less delay and more control. Hence, the flow control system 600 operates without any need for external controls(col.7, lines 40-50) and "Likewise, when the amount of data stored in the receiving buffer 606 reaches the AE level 610 (*lower threshold*), then the MAC control 602 produces and issues a pause frame to a sending station to inform to the sending station that data transmission should be resumed. This pause frame, which is generated when the AE level 610 is reached, includes a pause time of zero, such that the sending point may immediately resume data transmission. The pause frame with a zero pause time can also be referred to as a resume frame" (col. 7, lines 55-64). Thus, it would have been obvious to one ordinary skill in the art at the time the invention was made to combine the teachings of Ramsden and Ramakrishnan to achieve the claimed feature of "*wherein if the data volume exceeds an upper threshold of the frame cache, the created LFP frames contain a control field which controls to stop sending data, and if the data volume is lower than a lower threshold of the frame cache, the created LFP frames contain a control field which controls to start sending data*". Such combination would have permitted Ramsden's method to control the flow data between points in a network environment such that the amount of transmitted data lost is reduced (see Ramakrishnan, col. 3, lines 56-58).

As to claim 9, Ramsden also discloses:

wherein said creating and encapsulating comprises:

A) continuing to monitor said data volume in an uplink direction in said frame cache of said first EoS device **[Operation of frame transmission buffer 411 and frame receipt buffer 414 is control by micro-processor, known herein as a buffer monitor 416]** (see column 13, lines 27-29); and

B) inserting said control field into each of said one or more LFP frames, said control field being based upon said data volume in said frame cache, wherein: if said data volume exceeds said upper threshold, said encapsulating includes periodically sending LFP frames whose control field controls to stop sending; if said data volume falls below said lower threshold, said encapsulating includes periodically sending LFP frames whose control field controls to start sending; and if said data volume falls between said upper threshold and said lower threshold, said encapsulating does not send LFP frames **[Field 903 is known in the art as "which reset" and this field may take various control values of various control parameters depending upon the particular implementation. Similarly, field 904 comprises control information related to inhibition of access to particular read and write registers]** (column 19, lines 44-49) and **[predetermining a data amount threshold level for said buffer]** (column 3, lines 35-36] and **[in respect to said buffering means, associating a data amount threshold level with at least one of said frame based data sources; with respect to a said threshold level, monitoring an amount of data received from said associated data source; and in response to said step of**

monitoring said amount of said data received with respect to its associated threshold level, generating a signal to adapt said rate of transmission of said data from said associated data source](see Ramsden, column 5, lines 18-28); and

C) wherein said one or more LFP frames are inserted at the head of a data queue for encapsulation and are given priority, and wherein if there are no Ethernet frames being encapsulated, the LFP frames are immediately encapsulated, and otherwise, the LFP frames are encapsulated immediately after current Ethernet frames are encapsulated **[Following step 704 control is passed to step 705 wherein buffer monitor 416 is configured to substantially immediately issue a signal along control line 419 to pause frame store 420 so as to cause pause frame store 420 to transmit the aforementioned prepared pause frame along control line 421 where after the pause frame is inserted into the data stream (i.e in a Virtual Container or a plurality of Virtual Containers) being transmitted between frame ransmission buffer 411 and frame stuffing means 412]** (see Ramsden,column 16, line 52 – column 17, line 3).

All the limitations of this claim have been noted in the rejection of claim 8, therefore rejected under similar rationale (see the rejection of claim 8 above).

As to claim 12, Ramsden further discloses:

wherein a carrier for LFP frames is configured according to a standard IEEE 802.3x PAUSE frame structure (see Figure 4, element (420): Pause Frame Store

together with paragraph [0030], and **[Switches 103 and 104 may each comprise an IEEE 802.3 switch (such as an Ethernet switch)]** (see Ramsden, column 9, lines 18-20) and **[the present invention may be configured to utilize pause frames as described in the IEEE 802.3x standard]** (see Ramsden, column 19, lines 57-58). All the limitations of this claim have been noted in the rejection of claim 8, therefore rejected under similar rationale (see the rejection of claim 8 above).

As to claims 17, 18 and 22-24, all the limitations of these claims have been noted in the rejection of claims 8 and 9, therefore they are rejected under similar rationale (see the rejection of claims 8 and 9).

As to claim 19, all the limitation of this claim have been noted in the rejection of claims 10 and 12, therefore it is rejected under similar rationale (see the rejection of claims 10 and 12).

As to claim 25, all the limitations of this claim have been noted in the rejection of claim 9, therefore it is rejected under similar rationale as claim 9.

As to claims 26 and 27, all the limitations of those claims have been noted in the rejection of claims 8 and 15, therefore they are rejected under similar rationale (see the rejection of claims 8 and 15).

As to claims 28 and 29, all the limitations of those claims have been noted in the rejection of claims 8 and 13, therefore they are rejected under same rationale (see the rejection of claims 8 and 13).

9. Claims 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over European Patent Application No EP 1006751 A2 issued to Ramsden et al. in view of Ramakrishnan (US Pat No. 6,167,029) as applied to claims 8, 9, 12, 17-19 and 22-29 above, and further in view of Yu (US Pat No. 7,031,341 B2).

As to claim 13, neither Ramsden nor Ramakrishnan expressly discloses the claimed feature of "wherein said second EoS device processes said LFP frames in an LFP frame regeneration pattern, said interpreting and executing comprising: if the control field in an LFP frame does not control to start sending, halting encapsulating of data at said second EoS device to cause data to stack up and to cause a user device coupled to said second EoS device to stop sending Ethernet frames, said LFP frame being defined by IEEE 802.3x as a PAUSE frame or a back pressure signal; and if the control field in an LFP frame controls to start sending, continuing to normally encapsulate and map data at said second EoS device". Yu, from the same or similar field of endeavors, discloses placing LAPS frames into low order VCs with octet interleaving based on multiplexer structure of SDH, transmitting them in the sequence of multiplex section, regenerator section and Electrical/Optical/Radio section, and then extracting LAPS frames on a receiving side in a n opposite sequence (see Yu, column 8, lines 4-9 together with Figures 2,3). Thus, it would have been obvious to one ordinary skill in the art at the time the invention was made to further

modify the teachings of Ramsden and Ramakrishnan by utilizing regeneration pattern as taught by Yu to achieve the claimed feature of "wherein said second EoS device processes said LFP frames in an LFP frame regeneration pattern, said framing and executing comprising: if the control field in an LFP frame does not control to start sending, halting encapsulating of data at said second EoS device to cause data to stack up and to cause a user device coupled to said second EoS device to stop sending Ethernet frames, said LFP frame being defined by IEEE 802.3x as a PAUSE frame or a back pressure signal; and if the control field in an LFP frame controls to start sending, continuing to normally encapsulate and map data at said second EoS device". Such combination would have permitted Ramsden and Ramakrishnan's method to provide a way to communication between a telecom SDH/SONET transmission device and a remote access datacom device by adapting MAC frame directly to SDH/SONET(see Yu, column 3, lines 25-27).

As to claim 14, Ramsden discloses the claimed feature of "wherein when said user device coupled to said second EoS device stops sending data to said second EoS device, the data volume in the data cache of said first EoS device decreases gradually; wherein when the data volume in the data cache of said first EoS device reaches said lower threshold, the first EoS device generates at least one LFP frame having a control field to start sending; and wherein said LFP frames are given priority for decapsulation at said second EoS device to interpret and execute flow-control to control the user device coupled to said second EoS device to send data again" described as control of the rate of transmission of

remote Ethernet switches by flow control means 203 is under-taken by process 304 identified in Fig. 3. Ramsden further discloses that the predetermined threshold level may be configured by use of a pointer or other suitable marker device configured to monitor the amount of data (in bytes) that buffer B is currently holding relative to a threshold reference data amount level (see Yu, column 16, paragraph [0033]). Most of the limitation of this claim has been noted in the rejection of claim 13, therefore it is rejected as set forth above.

As to claim 15, neither Ramsden nor Ramakrishnan explicitly discloses the claimed feature of "wherein an LFP transparent pattern is used when said second EoS device identifies and processes an LFP frame; and wherein said second EoS device interprets and executes said LFP frames according to whether a user device coupled to said second EoS device supports full duplex, wherein: if said user device works in full duplex mode, it is unnecessary to interpret the LFP frames, and the LFP frames are sent directly to said user device; and if said user device works in half duplex mode, the control field of each LFP frame is interpreted, wherein if the control field controls to start sending, a back pressure control signal will be cancelled, and otherwise, the back pressure control signal will be sent to make said user device detect a conflict and stop transmitting data". However, Yu discloses the transparency processing as after FCS computation, the EoS apparatus examnines the entire frame between any two flag Sequences (see Yu, column 18, lines 10-30). Thus,

it would have been obvious to one ordinary skill in the art at the time the invention was made to further modify the teachings of Ramsden and Ramakrishnan by utilizing transparent pattern as taught by Yu to achieve the claimed feature of "wherein an LFP transparent pattern is used when said second EoS device identifies and processes an LFP frame; and wherein said second EoS device explains and executes said LFP frames according to whether said user device coupled to said second EoS device supports full duplex, wherein: if said user device works in full duplex mode, it is unnecessary to phrase the LFP frames, and the LFP frames are sent directly to said user device; and if said user device works in half duplex mode, the control field of each LFP frame is phrased, wherein if the control field controls to start sending, a back pressure control signal will be cancelled, and otherwise, the back pressure control signal will be sent to make said user device detect a conflict and stop transmitting data". Such combination would have permitted Ramsden and Ramakrishnan's method to provide a way to communication between a telecom SDH/SONET transmission device and a remote access datacom device by adapting MAC frame directly to SDH/SONET(see Yu, column 3, lines 25-27).

As to claim 16, all the limitations of this claim are similar in scope to claim 14, therefore it is rejected under same rationale as claim 14.

10. Claims 11, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over European Patent Application No. EP 1006751 A2 issued to Ramsden et al. in view of Ramakrishnan (US Pat No. 6,167,029) as applied to claims 8, 9, 12, 17-19 and 22-29 above, and further in view of Crayford (US Pat No. 5,673,254).

Regarding claim 11, neither Ramsden nor Ramakrishnan explicitly discloses the claimed feature of "wherein if said data volume exceeds said upper threshold, the control field will contain 0x0FFFFH, and if said data volume falls below said lower threshold, the control field will contain 0x0H; and wherein said control field is controlled in an Xon/Xoff fashion". Crayford, from the same or similar field of endeavors, discloses the unused code-groups to be utilized to transmit flow control information and it is also possible to signal flow control information within the packet data stream(see Crayford, column 15, lines 38-42). Moreover, Crayford further discloses "Utilizing some unused code-groups can flow simple and flexible flow control to be implemented. For instance, mapping code-groups to mean "XON, XOFF" allows a minimal code space to be used"(see Crayford, column 15, lines 48-55). Thus, it would have been obvious to one ordinary skill in the art at the time the invention was made to further modify the teachings of Ramsden and Ramakrishnan by utilizing "Xon/Xoff" fashion as taught by Crayford to achieve the claimed feature of "wherein if said data volume exceeds said upper threshold, the control field will contain 0x0FFFFH, and if said data volume falls below said lower threshold, the control field will contain 0x0H; and wherein said control field is controlled in an Xon/Xoff fashion". Such combination would have permitted Ramsden and Ramakrishnan's method to provide excellent performance using substantially less dedicated buffer memory, simplifying the

buffering scheme and allowing cost reductions over an Ethernet switch having full-duplex, and half-duplex ports (see Crayford, column 5, lines 64-66).

Regarding claims 20 and 21, they are similar in scope to claim 11, therefore rejected under same rationale as set forth above.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bryan Bui whose telephone number is (571)-

270-1981.The examiner can normally be reached on Monday-Friday from 8:00 am to 5:00 pm (EST). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenton B. Burgess can be reached on (571)-272-3949. The fax phone number for the organization where this application or proceeding is assigned is (571)-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pairdirect.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from USPTO Customer Service Representative or access to the automated information system, call 1-(800)-786-9199 (in U.S.A or Canada) or 1-(571)-272-1000.

BB

/Krisna Lim/

Primary Examiner, Art Unit 2153